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Nuclei and Fundamental Symmetries[1]

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Nuclei provide marvelous laboratories for testing fundamental interactions, often enhancing weak processes through accidental degeneracies among states, and providing selection rules that can be exploited to isolate selected interactions. I will give an overview of current work, including the use of parity violation to probe unknown aspects of the hadronic weak interaction; nuclear electric dipole moment searches that may shed light on new sources of CP violation; and tests of lepton number violation made possible by the fact that many nuclei can only decay by rare second-order weak interactions. I will point to opportunities in both theory and experiment to advance the field.

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